Blake T. Sturtevant

Curriculum Vitae

Research Scientist
Materials Physics and Applications
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Education

Ph.D. (Physics), University of Maine, Orono, ME — December 2009
Thesis Title: Ultrasonic Characterization of Single Crystal Langatate
Major Advisors: Robert J. Lad (Physics) & Mauricio Pereira da Cunha (Electrical Engineering)

A.B. (Physics, minor in Economics), Bowdoin College, Brunswick, ME — May 2003

Certificate in Sensor Science, Engineering & Informatics, University of Maine — December 2009

Neutron Science Summer School, Los Alamos National Laboratory — July 2011

Positions Held

Research Scientist 2, Los Alamos National Laboratory — 2013-Present

Postdoctoral Research Associate, Los Alamos National Laboratory — 2010-2012

NSF IGERT Trainee (Sensor Science, Engineering, & Informatics), University of Maine — 2005-2009

Graduate Teaching Assistant, University of Maine — 2004-2005

Laboratory Technician, Princeton University — 2003-2004

Honors

Los Alamos Awards Program (LAAP), Recipient — 2011, 2016

LANL Postdoc Research Day, Outstanding Poster Award, Honorable Mention — 2012

Chase Distinguished Research Assistantship — 2008-2009

IEEE International Frequency Control Symposium, Best Student Paper Competition, Finalist. — 2009

NSF IGERT Traineeship — 2005-2009

SURDNA Fellowship — 2002-2003

Service

Laboratory Directed Research & Development (LDRD), LANL, Review Panelist — 2016

MS Cookies & Tea (LANL Materials Science Colloquium), Co-Host 2015

NSF Review Panelist 2014, 2015

Referee for: *Physical Review Letters; Physical Review Applied; Physical Review E; IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control; IET Science, Measurement &Technology*

Los Alamos Postdoc Association (LAPA), President 2011

Bowdoin College Admissions, Alumni Interviewer

Memberships

Acoustical Society of America

IEEE, Society of Ultrasonics, Ferroelectrics, and Frequency Control

Journal Publications

1. E.S. Davis, **B.T. Sturtevant**, D.N. Sinha, C. Pantea, "Resonant Ultrasound Spectroscopy Studies of Berea Sandstone at High Temperature," [*Under Revision*]
2. **B.T. Sturtevant**, C. Pantea, D.N. Sinha, "Measured Sound Speeds and Acoustic Nonlinearity Parameter in Liquid Water up to 523 K and 14 MPa," [*Under Revision*]
3. **B.T. Sturtevant**, C. Pantea, D.N. Sinha, "The Acoustic Nonlinearity Parameter in Fluorinert up to 381 K and 13.8 MPa," *J. Acoust. Soc. Am. Express Letters* (2015), DOI: 10.1121/1.4922537.
4. G.P. Bernhardt, J.I. Krassikoff, **B.T. Sturtevant**, R.J. Lad, "Properties of Amorphous SiAlON Thin Films Grown by RF Magnetron Co-Sputtering," *Surface & Coatings Technology* (2014), doi:10.1016/j.surfcoat.2014.07.011
5. **B.T. Sturtevant**, M. Pereira da Cunha, R.J. Lad, "Properties of $SiAlO_2N$ Protective Coatings on Surface Acoustic Wave Devices," *Thin Solid Films* (2013); doi: 10.1016/j.tsf.2013.02.062
6. **B.T. Sturtevant**, C. Pantea, D.N. Sinha, "Evaluating the Effectiveness of the Transmission Line Model in Pulse Echo Couplant Layer Corrections," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr*, Vol 60, No. 5, May 2013, pp. 943—953.
7. **B.T. Sturtevant**, C. Pantea, D.N. Sinha, "An Acoustic Resonance Measurement Cell for Liquid Property Determinations up to 250°C," *Rev. Sci. Instrum*. **83**, 115106 (2012); doi: 10.1063/1.4765746
8. **B.T. Sturtevant**, M. Pereira da Cunha, "Assessment of Langatate Material Constants and Temperature Coefficients Using SAW Delay Line Measurements," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr*., Vol 57, No.3, March 2010, pp. 533—539.
9. **B.T. Sturtevant**, P.M. Davulis, M. Pereira da Cunha, "Pulse Echo and Combined Resonance Techniques: a Full Set of LGT Acoustic Wave Constants and Temperature Coefficients," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr*., Vol 56, No.4, April 2009, pp. 788—797.
10. Bender, M. L., D. T. Ho, M. B. Hendricks, R. Mika, M. O. Battle, P. P. Tans, T. J. Conway, **B. Sturtevant**, and N. Cassar (2005), Atmospheric O_2/N_2 changes, 1993–2002: Implications for the partitioning of fossil fuel CO_2 sequestration, *Global Biogeochem. Cycles*, *19*, GB4017, doi:10.1029/2004GB002410.

Conference Proceedings (full length papers with peer-reviewed abstracts)

1. **B.T. Sturtevant**, D.N. Sinha, C. Pantea, "Determination of the parameter of nonlinearity in liquid water up to 250°C and 14 MPa," *Proc. of 2012 IEEE Int'l Ultrason. Symp.*, doi: 10.1109/ULTSYM.2012.0070.
2. **B.T. Sturtevant**, M. Pereira da Cunha, "Assessment of Langatate Material Constants and Temperature Coefficients Using SAW Delay Line Measurements," *Proc. 2009 IEEE Int'l Freq. Cont. Symp*., pp. 160—165.
3. **B.T. Sturtevant**, M. Pereira da Cunha, R.J. Lad, "Determination of the Absolute Orientation of Langatate Crystals Using X-ray Diffraction," *Proc. 2008 IEEE Int'l Ultrason. Symp*., pp. 741—744.
4. D.J. Frankel, G.P. Bernhardt, **B. Sturtevant**, T. Moonlight, M. Pereira da Cunha, R.J. Lad, "Stable Electrodes and Ultrathin Passivation Coatings for High Temperature Sensors in Harsh Environments," *Proc. IEEE Sensors 2008*, pp. 82—5.
5. P. M. Davulis, **B.T. Sturtevant**, S. L. Duy, M. Pereira da Cunha, "Revisiting LGT dielectric constants and temperature coefficients up to 120 °C," *Proc. 2007 Int'l Ultrason. Symp*., pp 1397-1400.
6. **B.T. Sturtevant**, P.M. Davulis, M. Pereira da Cunha, "A New Set of LGT Constants and Temperature Coefficients Extracted through Resonant and Pulse Echo Techniques," *Proc. 2007 IEEE Int'l Freq. Cont. Symp*., pp 754-758.
7. **B.T. Sturtevant**, M. Pereira da Cunha, "BAW phase velocity measurements by conventional pulse echo techniques with correction for couplant effect," *Proc. 2006 IEEE Int'l Ultrason. Symp.*, pp 2261-2264.

Patents

1. "High-temperature, high pressure acoustic resonance cell," **Blake T. Sturtevant**, Cristian Pantea, Dipen N. Sinha, US Patent application submitted (#61/909,304).
2. "Fluid Characterization Using Acoustics," Alessandro Cattaneo, Dipen Sinha, Todd Jankowski, **Blake Sturtevant**, James Schrodt, US Provisional Patent submitted December 2015.

Technical Presentations

1. "*In situ* Ultrasonic Monitoring of Additively Manufactured Structures," Advanced Qualification of Additive Manufacturing Materials Workshop, July 20, 2015, Santa Fe, NM (Poster presentation by B. Sturtevant)
2. "A Resonance Technique for the Acoustic Characterization of Liquids in Harsh Environments," The 167th Meeting of the Acoustical Society of America, May 7, 2014, Providence, RI (Invited talk by B. Sturtevant)
3. "High Pressure and Temperature Acoustics Capabilities," Los Alamos Neutron Science Center, Static High Pressure Science at LANL Workshop, April 24, 2013 (Invited Talk by B. Sturtevant).

4. "High Precision Ultrasonic Measurement and Characterization Capabilities for Harsh Environments," Los Alamos National Laboratory, Materials Physics and Applications Division Seminar, December 18, 2012 (Talk by B. Sturtevant)
5. "The nonlinearity parameter, B/A, in FC-43 Fluorinert up to 373 K and 13.8 MPa," 164th Meeting of the Acoustical Society of America, Kansas City, MO, October 22-26, 2012 (Talk by B. Sturtevant).
6. "Determination of the acoustic nonlinearity parameter in liquid water up to 250°C and 12 MPa," 2012 IEEE International Ultrasonics Symposium, Dresden, Germany, October 7-10, 2012 (Talk by B. Sturtevant).
7. "Sound Speed Measurements in Water up to 563 K and 11.7 MPa using a Novel and Rugged Sensor," 2012 LANL Postdoc Research Day, June 6, 2012 (Poster by B. Sturtevant).
8. "Coupling Layer Corrections in Pulse Echo Time-of-Flight Measurements in Solids Revisited," 2011 LANL Postdoc Research Day, June 16, 2011 (Poster by B. Sturtevant).
9. "Coupling Layer Corrections in Pulse-Echo Time-of-Flight Measurements in Solids Revisited," 161st Meeting of the Acoustical Society of America, Seattle, WA, May 25, 2011 (Talk by B. Sturtevant).
10. "Ultrasonic Characterization of Single Crystal Langatate," University of Maine, November 19, 2009 (Oral Thesis Defense).
11. "Characterization of Single Crystal Langatate for Acoustic Wave Device Applications," Los Alamos National Laboratory, October 19, 2009 (Invited talk by B. Sturtevant).
12. "Assessment of Langatate Material Constants and Temperature Coefficients Using SAW Delay Line Measurements," IEEE Int'l Freq. Cont. Symp., Besançon, France, April 20-24, 2009 (Talk and Poster by B. Sturtevant).
13. "Determination of the Absolute Orientation of Langatate Crystals Using X-ray Diffraction," IEEE Int'l Ultrason. Symp., Beijing, China, Nov. 2-5, 2008 (Talk by B. Sturtevant).
14. "A New Set of LGT Constants and Temperature Coefficients Extracted Through Resonant and Pulse Echo Techniques," IEEE Int'l Freq. Cont. Symp., Geneva, Switzerland, May 28-30, 2007 (Poster by B. Sturtevant).
15. "BAW phase velocity measurements by conventional pulse echo techniques with correction for couplant effect," IEEE Int'l Ultrason. Symp., Vancouver, BC, Oct. 4-6, 2006 (Poster by B. Sturtevant).
16. "Localization by Signal Strength (LoSSt)," NSF IGERT PI Meeting, Arlington, VA, May 15-16, 2006 (Poster by B. Sturtevant).